DOCUMENT RESUME

ED 188 309 EA 012 758

AUTHOR Phelps, James L.; And Others
TITLE School District Revenues and Expenditures. School Finance Project Working Paper #2. Attachment A.
INSTITUTION Michigan State Dept. of Education, Lansing.
PUB DATE 17 Oct 79
NOTE 50p.; Occasional pages may not reproduce clearly. For related documents, see EA 012 756-757.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Equal Education; *Equalization Aid; *Expenditure Per Student; *Finance Reform; *Income; *Resource Allocation; School Districts
IDENTIFIERS *Michigan

ABSTRACT

This paper, one of three related documents, examines the distributions of general revenues and instructional expenditures across school districts in Michigan. It discusses the equal yield formula for the funding of public schools and examines how the formula has accomplished its objectives. The data indicate success in reducing the effects of property tax wealth on the level of school revenues and in providing some measure of property tax relief. The second half of the paper examines the state's broad goals regarding the distribution of resources in terms of three norms: equity, equality, and excellence. This section of the paper concludes that Michigan has achieved equity in the distribution of general revenues and expenditures for nearly 92 percent of its pupils. Secondly, equality has not been achieved. Finally, to achieve a minimum level for either expenditures or staff adequacy ratios, a constitutional amendment would be necessary. (Author/ID)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED188309

Attachment A

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

School Finance Project
Working Paper #2

SCHOOL DISTRICT REVENUES AND EXPENDITURES

Dr. James L. Phelps
Associate Superintendent
Elementary and Secondary Education

Mr. Michael F. Addonizio
Economic Analyst
School Finance Project

Mr. Thomas S. Nicol
Research Coordinator
School Finance Project

EA 012 758

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
M. Addonizio
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

LOCAL SCHOOL DISTRICT REVENUES AND EXPENDITURES:
THE RESULTS OF THE SCHOOL AID FORMULA

I. The Equal Yield Concept

Michigan's "equal yield" school aid formula for the funding of public schools is based on an uncomplicated notion: school districts should receive equal dollars per pupil for equal millage effort. Although there have been a number of descriptions of this concept, they all boil down to two key elements:

1. The local community should have the right to establish their own educational goals and to decide how much they are willing to spend to reach their goals; and

2. The ability of a school district to generate school revenue should not depend upon the property wealth of that district.

Article 9, Section 6, of the Michigan Constitution establishes the right of the local school electorate to decide how much they are willing to pay to reach their educational goals. This was not changed under the "equal yield" plan, nor could it be changed without a vote of the people.

The "equal yield" plan is designed to equalize the ability of districts to raise revenue by removing the previous tie between property wealth and expenditures. This is accomplished by providing greater state funds to lower SEV (State Equalized Valuation or property tax base) districts so that the combination of state and local revenues equals a specified amount, called the guarantee level.

According to the general membership formula passed by the legislature for the 1979-80 school year, a district's guarantee level would depend upon its millage rate. This dependence is due to the inclusion in the aid formula of a base payment of $325 per pupil. Specifically, the 1979-80 formula

provides the following per pupil aid for eligible districts:

Aid per pupil = $325 + ($43,000 X millage up to .030) -

(district SEV per pupil X millage up to .030)

+ ($43,000 X 1/2 millage over .030) -

(district SEV per pupil X 1/2 millage over .030)

Thus, the base payment of $325 has the effect of making each additional mill of operating tax levied by a school district worth progressively less in state membership aid, as indicated by Table I, below.

TABLE I

FY 79-80 Membership Aid Guarantee Levels

Millage	Guarantee Level ($/pupil/mill)
18 mills	$ 61.06
22 mills	$ 57.77
26 mills	$ 55.50
30 mills	$ 53.83
34 mills	$ 51.79
38 mills	$ 50.18
42 mills	$ 48.88

According to the formula, therefore, a school district of $30,000 SEV per pupil, levying 34 mills for school operation in 1979-80, would receive general membership aid in the following amount:

$325 plus ($43 - $30) or $13 per pupil per mill for the first 30 mills plus $13 per pupil per mill for half of the mills over 30. Thus, total general membership aid per pupil would be $325 + $416, or $741, for this hypothetical

school district. In addition to the general membership aid, the district would raise $30 per pupil for each mill levied, or $1,020 per pupil. Total revenue per pupil, therefore, would equal $741 plus $1,020, or $1,761. This is equivalent to the per pupil revenue that would be raised locally by a school district of $51,794 SEV per pupil levying 34 mills for school operations.

(The membership aid formulas for each year since 1967-68 are presented in Appendix A, along with a brief discussion of modifications made to the formula in 1975-76 and 1978-79.)

II. What Equal Yield Was Designed To Do

The success of the equal yield formula can be measured only in terms of its objectives. Thus, we must first revisit the objectives stated at the inception of equal yield some seven years ago. These objectives were succinctly stated by Dr. James L. Phelps in the November, 1976 issue of the Michigan School Board Journal[1] and are as follows:

1. To reduce the effects of property tax wealth on the level of school revenues.

2. To reduce the variation in millage rates across districts by providing incentives for low millage districts to increase their effort, while decreasing the necessity of low-SEV districts to levy high millages.

3. To increase the revenues available in previously low-spending districts without decreasing revenue in high-spending districts.

4. To provide greater equity within the property tax structure and some measure of property tax relief.

---

[1] James L. Phelps, "The Equal Yield Concept in Michigan, Third-Year Results," Michigan School Board Journal, Vol. XXII, No. 9, November, 1976.

The extent to which these objectives have been accomplished is discussed in Section III following.

III. What Equal Yield Has Accomplished

Objective One: To reduce the effects of property tax wealth on the level of school revenues.

Disparities in school revenues due to property tax wealth have been reduced, but not completely eliminated. Considerable progress has been made in reducing the difference in membership revenues between high- and low-SEV districts levying the same millage. When compared to the inequities existing in 1969-70, the "revenue gap" is now very small. What were once differences of over $500 per pupil between rich and poor districts levying 30 mills, have now been completely eliminated. However, although substantial progress has already been made, some inequities caused by differences in tax base still exist. A "revenue gap" still exists between high- and low-SEV districts levying more than 30 mills. Table II (next page) illustrates the narrowing of the "revenue gap" between $40,000 and $10,000 SEV per pupil districts levying the same millage.

Another way to analyze the equalizing effects of the equal yield formula is to determine the amount of revenues, state and local, falling within the guarantee levels and to compare that to total revenues. The following definitions are useful for understanding this analysis:

1. In-formula: For a district that is within the SEV guarantee and millage ceiling, all local and state membership aid is considered equalized.

TABLE II

Revenue Gap Between $10,000 SEV and $40,000 SEV Districts
Levying the Same Operational Millage

Year	20 Mills	22 Mills	25 Mills	27 Mills	30 Mills	33 Mills	35 Mills
1969-70	$299.00	$354.00	$449.00	$509.00	$599.00	$609.50	$748.50
1974-75	20.00	22.00	25.00	85.00	175.00	265.00	325.00
1975-76	-0-	4.00	9.00	12.00	100.00	192.25	252.25
1976-77	-0-	.80	2.00	2.80	63.20	153.20	213.20
1977-78	-0-	-0-	-0-	-0-	-0-	90.00	150.00
1978-79	-0-	-0-	-0-	-0-	-0-	90.00	150.00
1979-80	-0-	-0-	-0-	-0-	-0-	45.00	75.00

2. Out-of-formula because of high SEV: For these districts, the amount of local revenue up to the guarantee level is considered equalized. The remainder is considered nonequalized because of SEV. (For a $50,000 SEV per pupil district, $50 minus the guarantee level of $43, or $7 per pupil per mill is nonequalized under the FY 79-80 formula. The remainder is equalized.)
3. Out-of-formula because of high millage: For these districts, the amount of local revenue generated above the millage ceiling is considered nonequalized and the remainder equalized. (According to the FY 79-80 formula, a district levying 36 mills would be reimbursed for all mills up to 30 and for half the mills over 30. The remaining three mills would be nonequalized. Therefore, the nonequalized portion of revenue would be the district's SEV multiplied by the three nonequalized mills.)
4. Out-of-formula because of high SEV and high millage: A combination of the principles in numbers two and three, above, determine the "equalized" and "nonequalized" portions.

The relative and absolute amounts of equalized and nonequalized state and local school revenues for each year since FY 72-73 are presented in Table III, next page.

From these data we conclude:

1. The proportion of "equalization" has increased under the equal yield concept from 81 to 97 percent.

2. The remaining nonequalized revenue is attributable exclusively to high-SEV districts.

TABLE III

Progress of Equal Yield

	Total	Equalized	Nonequalized		
			SEV	Millage	SEV and Millage
1972-73	$1,810.8 (million)	$1,469.8 (81.2%)	13.3 (.7%)	327.7 (18.1%)	N/A
1973-74	1,989.9	1,773.3 (89.1%)	25.3 (1.3%)	186.9 (9.4%)	3.6 (.2%)
1974-75	2,173.1	1,999.2 (92.0%)	43.0 (2.0%)	127.5 (5.9%)	3.4 (.1%)
1975-76	2,397.1	2,187.5 (93.5%)	57.2 (2.4%)	92.2 (3.9%)	5.1 (.2%)
1976-77	2,501.1	2,427.9 (93.5%)	52.0 (2.1%)	105.6 (4.2%)	5.6 (.2%)
1977-78	2,752.5	2,584.4 (93.9%)	74.1 (2.7%)	90.8 (3.3%)	3.2 (.1%)
1978-79	2,939.4	2,841.3 (96.7%)	98.1 (3.3%)	-0-	-0-

Objective Two: To reduce the variation in millages between districts by providing incentives for low-millage districts to increase their effort, while decreasing the necessity of low-SEV districts to levy high millages.

Some insight into this question can be gained through an examination of millage election results. As the data presented in Table IV (next page) indicate, elections for additional operational millage were considerably more successful in the two years immediately following the inception of equal yield than in the previous two years. The percentage of successful elections for additional operational millage fell sharply, however, over the last four years. This latter development is not surprising, since the success of the millage elections in 1973 and 1974 may have precluded the need for additional increases in subsequent years.

The relevant question is whether or not the relatively high number of successful millage elections following the inception of equal yield served to reduce or increase the variation in millages between districts. The answer is readily apparent from the data presented in Table V, below: Operational millages increased most among the previously low-millage districts.

As the data for school year 1972-73 indicate, the variation in operational millage rates under the former Strayer-Haig or "deductible millage" formula was substantial. The formula provided incentives for some school districts to keep their millages low while other school districts, generally of low tax base, were forced to levy high millage rates in order to remain competitive with wealthier school districts.

During the first two years of equal yield, operational millages increased substantially among previously low-millage districts, while previously high-millage districts registered only small increases. Significantly, the

TABLE IV

Percent of Successful Elections

Year	Operational Renewal	Operational Additional	Operational Total	Bonding
1971	68.9	37.1	56.5	35.8
1972	82.8	44.5	70.1	29.0
1973	88.9	60.8	77.7	36.3
1974	86.1	63.3	73.7	33.6
1975	85.2	45.0	69.6	18.9
1976	94.1	31.3	56.4	19.3
1977	87.7	34.9	60.2	24.6
1978	94.2	31.0	64.4	34.7

TABLE V

Comparative Increases in Tax Effort Behind Michigan Pupils

Percentile	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79
90th	31.56	31.53 (-0.1%)	31.82 (0.9%)	32.76 (3.0%)	34.24 (4.5%)	35.69 (4.2%)	34.62 (-3.0%)
85th	30.42	30.53 (0.4%)	30.67 (0.5%)	30.74 (0.2%)	33.74 (9.8%)	34.45 (2.1%)	33.94 (-1.5%)
80th	29.58	29.65 (0.2%)	30.03 (1.3%)	30.43 (1.3%)	32.56 (6.9%)	33.85 (3.9%)	33.37 (-1.4%)
70th	27.81	27.76 (-0.2%)	28.44 (2.4%)	28.99 (1.9%)	30.00 (3.5%)	31.29 (4.3%)	31.74 (1.4%)
60th	26.22	26.58 (1.4%)	27.10 (2.0%)	27.84 (2.7%)	28.57 (2.6%)	30.00 (5.0%)	30.00 (0.0%)
50th	24.57	24.54 (-0.1%)	25.22 (2.8%)	26.65 (5.7%)	27.54 (3.3%)	28.48 (3.4%)	29.00 (1.8%)
40th	23.08	23.15 (0.3%)	24.34 (5.1%)	25.00 (2.7%)	26.20 (4.8%)	27.00 (3.1%)	28.44 (5.3%)
30th	21.02	22.51 (7.1%)	22.90 (1.7%)	24.00 (4.8%)	25.00 (4.2%)	25.51 (2.0%)	27.60 (8.2%)
20th	18.35	22.00 (19.9%)	22.51 (2.3%)	22.51 (0.0%)	22.77 (1.2%)	25.50 (11.9%)	25.75 (1.0%)
15th	16.06	21.30 (32.6%)	22.50 (5.6%)	22.51 (0.0%)	22.51 (0.0%)	25.00 (11.1%)	25.00 (0.0%)
10th	15.52	21.15 (29.8%)	22.00 (9.2%)	22.50 (2.3%)	22.51 (0.0%)	24.00 (6.6%)	24.23 (0.9%)
Range	16.04	10.38	9.82	10.26	11.73	11.69	10.39

Source: Education Section, Office of the Speaker, Michigan House of Representatives

"millage gap" between high-millage districts (districts at the 90th percentile) and the low-millage districts (the 10th percentile) declined from 16.04 mills in 1972-73, before equal yield, to 10.38 mills in 1973-74, a decline of 35.3 percent. The millage gap declined further to 9.82 mills in 1974-75.

This trend was reversed, however, in 1975-76, the third year of equal yield. During this year, the revenue gap increased to 10.26 mills, with the high-millage districts increasing faster than the low-millage districts. The increasing trend was continued in 1976-77, with the millage gap growing to 11.73 mills. While the precise reasons for this reversal are not readily apparent, it could well be attributable to the introduction of the "two-step" aid formula introduced in 1975-76 and continued in 1976-77. Under this formula, lower millage districts generally received a greater percentage increase in state aid than did higher millage districts and, therefore, faced less pressure for a millage increase.

The millage gap remained nearly unchanged in 1977-78 and declined somewhat in 1978-79, falling to approximately the same level it attained back in 1973-74. This decrease is attributable to above-noted modification of the state aid formula introduced in 1977-78. This modification consisted of two features:

1. The introduction of a base allowance in the state guarantee, which had the effect of reducing the amount of state membership aid a district received for each additional mill levied. (See Tables I and II, above.)

2. A "roll-back" feature, whereby districts levying more than 30 mills would receive formula reimbursement for their over-30 millage only if they translated the additional aid into property tax reduction.

Since this revised formula was not enacted into law until mid-1977, by which time most millage elections for 1977-78 had already been held, the impact of the formula on the 1977-78 millage elections was minimal. The significant percentage increases registered at the 10th, 15th, and 20th percentiles are not surprising considering the negligible increases made by these low-millage districts during the previous two years. under the two-step formula.

The effects of the base allowance and the rollback are evident in the 1978-79 data. The high millage districts at the 90th, 85th, and 80th percentile actually reduced their millage rates, while the 50th, 60th, and 70th percentile levels registered little or no gain. The 30th and 40th percentile levels, on the other hand, increased significantly, while little or no increase was registered at the 20th, 15th and 10th percentiles. The latter development is understandable in view of the increases made by these low-millage districts in the previous year. In sum, the data indicate a moderate reduction in the millage gap as a result of the formula revisions of 1977-78 as well as a de-emphasis upon the property tax as a revenue source. This latter development is discussed below.

Objective Three: To increase the revenues available in previously low-spending districts without decreasing revenues in high-spending districts.

As the data presented in Table VI (next page) clearly indicate, the largest per pupil revenue gains since the inception of equal yield have been made by the low-expenditure districts, but not at the expense of high-expenditure districts. The growth in per pupil revenues among the districts below the median (i.e., the 50th percentile) has exceeded the growth of district revenues, and has been progressively larger at each lower decile

TABLE VI

Distribution of Membership Revenues per Pupil

Percentile	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	Six-Year Gain
90th	$ 998	$1,079	$1,208	$1,227	$1,447	$1,583	$1,799	80.3%
80th	993	1,012	1,114	1,187	1,343	1,491	1,635	64.7%
70th	890	969	1,065	1,158	1,269	1,420	1,565	75.8%
60th	863	929	1,023	1,120	1,223	1,367	1,487	72.3%
50th	825	923	1,008	1,090	1,194	1,305	1,451	75.9%
40th	775	912	1,003	1,052	1,155	1,248	1,394	79.9%
30th	736	872	975	978	1,080	1,239	1,349	83.3%
20th	700	837	916	967	1,034	1,204	1,328	89.7%
10th	634	775	857	932	1,032	1,144	1,254	97.8%
Range	364	304	351	295	315	439	545	

above the median has increased more slowly than revenues at the median, with the exception of the 90th percentile. In sum, the data clearly reflect a "levelling up" in terms of percentage growth in district revenues, although the absolute difference between the 90th and 10th percentiles has increased.

Objective Four: To provide greater equity within the property tax structure and provide some measure of property tax relief.

Under the excess burden property tax relief feature, most often called the "circuit breaker," the state reimburses individuals 60 percent of the amount by which property taxes on their homes (or on farmland, buildings, equipment and homes for farmers) exceeds 3.5 percent of their income. Renters receive similar relief, with 17 percent of their rent being counted as property tax. For senior citizens and certain veterans, the state will reimburse 100 percent of the excess. The maximum rebate is set at $1,200, up from $500 prior to 1975-76. In all, approximately $300 million was returned to Michigan taxpayers during 1978-79.

Greater property tax relief has been given to low-income families than to high-income families. That is, the amount of property tax relief provided under the "circuit breaker" program has been inversely proportional to family income.

Property tax relief is provided under Section 27 of the State Aid Act. As a condition of receiving state reimbursement for capital outlay under Section 27 of the State Aid Act, school districts must lower their property tax an equivalent amount. In 1977-78, $22,625,000 was disbursed to 380 districts levying under 26.4 mills the previous year for operation. In 1978-79, the relief was extended to 380 districts levying under 26.6 mills for operation at a cost of $19,925,866.00.

The growth of property tax yields and effective millage rates has slowed considerably since the inception of equal yield. As the data presented in Table VII indicate (next page), the average annual growth in property tax yield has declined from nearly 22 percent during the period from 1965-66 to 1970-71 to about 13 percent during the next five years and to about 8 percent during the past three years. Furthermore, the growth in property tax credits has made the decline in tax yield even more dramatic, with the growth in the adjusted yield falling from over 20 percent during the 1965-66 to 1970-71 period to about 11 percent during the next five years and to only 5 percent during the last three years.

Finally, an even more dramatic trend is observed with regard to the adjusted effective millage rate. While this rate increased an average of 8.4 percent between 1965-66 and 1970-71, this average annual growth declined to only 1.2 percent during the next five years and to a mere 0.4 percent during the past three years.

IV. Equity, Equality, and Excellence: Alternative Concepts in School Finance

From the foregoing analysis, we have seen the extent to which Michigan's equal yield formula has succeeded in accomplishing four specific objectives. The data indicate substantial success in reducing the effects of property tax wealth on the level of school revenues, as well as increasing revenues in previously low-spending districts and providing some measure of property tax relief. At the same time, equal yield appeared to be less successful in reducing the variation in millage rates and per pupil expenditures across school districts.

TABLE VII

CHANGES IN SEV, YIELD, and EFFECTIVE PROPERTY TAX RATES

	1965-66	1970-71	1975-76	1978-79	ANNUAL PERCENT INCREASE* 1st Period: 66-70/71	2nd Period: 70/71-75/76	3rd Period: 75/76-78/79
SEV (billion)	27.08	38.55	56.81	64.81	8.48	9.48	4.7
YIELD (million)	443.20	929.10	1,531.90	1,902.70	21.92	12.98	8.1
TAX CREDIT (million)	3.50	40.00	143.00	300.00	N/A	N/A	N/A
ADJUSTED YIELD (million)	429.70	889.10	1,388.90	1,602.70	20.44	11.24	5.1
EFFECTIVE RATE (mills)	16.37	24.10	26.33	29.36	9.44	1.84	3.8
ADJUSTED RATE (mills)	16.24	23.06	24.45	24.73	8.40	1.20	0.4

*Estimated

What do these trends mean for the overall quality of public education in Michigan? How are they to be evaluated in terms of more broad goals regarding the distribution of resources across local districts? More fundamentally, what are these goals? Three alternatives are conceptualized in Table VIII (next page). Each alternative is distinguishable from the other two and each suggests a different interpretation of empirical findings.

1. Equity (or Fiscal Neutrality) -- Obviously, the concept of equity cannot be authoritatively defined solely on the basis of objective criteria. Reliance upon value judgments is inescapable and two related value judgments will be adopted here. The first is the long-standing principle that government should ordinarily leave decision-making and administration to the smallest unit of society competent to handle them. This principle, which is a cornerstone of our federal system of government, is applied to the issue of public school finance in Private Wealth and Public Education, by Coons, Clune and Sugarman. In their analysis, the authors assign to this principle the label subsidiarity and sharpen its definition: "Subsidiarity . . . implies at least the power of localities to decide (a) how much education they desire (perhaps within minimums and maximums set by the state) and (b) how much they are willing to spend to reach their goals. It is this outlook toward public education which permits some localities to spend more than others; it is a source of one kind of inequality."[2]

The authors point out, however, that while subsidiarity does not guarantee equality of school programs across local districts, neither does subsidiarity

---

[2]Coons, Clune and Sugarman, Private Wealth and Public Education, Harvard University Press, (Cambridge: 1970), p. 16.

Table VIII

DISTRIBUTION IN PUBLIC SCHOOL FINANCE: ALTERNATIVE CONCEPTS.

CONCEPT	DEFINITION	MEASUREMENT	FOCUS OF CONCERN	PRIMARY ADVANTAGES	PRIMARY DISADVANTAGES
Equity (Fiscal Neutrality)	The wealth of a school district is not associated with noncategorical primary and secondary school expenditures in that district.	The correlation coefficient relating school district wealth to school expenditures is insignificant. Sensitivity of coefficient to alterntative definitions of wealth must be identified. Relationships between district and school services-student outcomes will be explored.	Dependence of school expenditures on district wealth.	Equal access to educational resources; promotes local fiscal autonomy.	Educational expenditures depend upon voters' preferences; wealthy might desert public schools.
Equality	Service variables are equalized across local school districts. Equality could also be defined in terms of expenditures per student or in terms of outcomes.	The variance of the distribution of the selected service variables across local districts is near zero.	Disparities in service levels across local districts.	Equal service levels for equivalent student groups. Expenditures per student equated across districts thru adjustment for "cost of doing business."	Interference with local fiscal autonomy.
Excellence/Adequacy	Each local school district is performing at or above a specified level and is encouraged to go beyond this level.	Standard may be expressed in terms of: expenditures per pupil; service levels per pupil; or pupil achievement.	Inadequate resource levels and/or pupil achievement in some local districts.	System-wide access to a guaranteed level of resources.	Interference with local fiscal autonomy; does address inequality of services/outcomes across local districts

prohibit it. Rather, subsidiarity is entirely compatible with the notion of equal educational opportunity -- that is, the notion that each local district is free to choose their desired level or quality of educational program, constrained not by its own school district wealth, but solely by the wealth of the state as a whole.

As a way in which to put this principle into effect, the authors pose the following reform:

> "Equal district power is the key. The concrete financing proposal may be stated thus: equal tax rates should provide equal spendable dollars. That is, the local unit would be empowered to fix the tax rate (effort) to be imposed upon a specific class of local wealth. For every level of local tax effort permitted by statute, the state would have fixed the number of dollars per task unit (probably per pupil) that the district would be empowered to spend. The state also guaranteed that this number of dollars will be available to the district."[3]

Thus, according to the authors' argument, a system of school finance would be equitable to the extent that it effected a distribution of school revenue across districts which either: (1) shows no significant correlation with district wealth; or (2) shows a correlation with district wealth that is entirely attributable to a correlation between district wealth and millage rate. The measurement of equity in Michigan school finance is a two-step process involving: (1) the calculation of correlation coefficients relating district wealth and district revenues and, (2) the calculation of correlation coefficients between millage and revenue in those cases where the wealth/revenue correlation coefficient is not near zero.

A wealth-neutral or equitable system of school finance would exhibit either one of the following: (a) a near-zero correlation between wealth and revenue, or (b) a near perfect (i.e., near +1) correlation between revenue and

---

[3]Coons, et al., p. 34

millage. Any other result would be evidence of a direct relationship between district wealth and district revenues regardless of district millage rates. Such a finding would violate our definition of equity.

Once our methodology is selected, we must specify the appropriate measures for the variables. The appropriate measure of school district wealth would be SEV per pupil, the basis of general membership aid in Michigan. The appropriate measure of school district revenues would be local revenue plus general membership state aid. (Since we are evaluating the fiscal neutrality of the state's general membership aid formula, the inclusion of categorical funds in the revenue measure would be inappropriate.)

Correlation coefficients relating school district SEV per pupil to school district local and general membership revenue and to three categories of school district expenditures are presented in Table IX, below. In addition, coefficients relating SEV per pupil to state equalized aid (i.e., general membership aid) and to district millage rates are presented in order to fully illustrate the relationship between district wealth and financial resources.

Separate coefficients are presented for five district groups defined in terms of property wealth in order to identify that group for which fiscal neutrality has been achieved. Coefficients are also calculated for the entire group of K through 12 districts.

The row of coefficients relating state equalized aid with SEV show a nearly perfect inverse relationship for the 485 districts below $55,000 SEV per pupil. This result is entirely consistent with the intent and design of the general membership aid formula: the higher a district's SEV per pupil, the less state membership aid received. The second row of coefficients, relating local and state equalized (i.e., general membership) aid to SEV, are not so

TABLE IX

CORRELATION COEFFICIENTS
BETWEEN MEASURES OF SCHOOL DISTRICT REVENUES, EXPENDITURES & LEVIED MILLAGE
AND DISTRICT SEV PER PUPIL, 1977-78
(K-12 DISTRICTS ONLY)

REVENUE MEASURE	DISTRICTS WITH SEV PER PUPIL LESS THAN:					
	40,000	45,000	50,000	55,000	SEV>55,000	State-wide
State Equalized Aid	-.97	-.98	-.98	-.98	---	-.74
Local and State Equalized	.22	.21	.18	.24		
LEVIED MILLAGE	.21	.19	.13	.10	-.60	-.30
EXPENDITURE MEASURE						
Instructional Expenditure	.03	.04	.06	.11	.15	.30
Total Expenditure	.08	.09	.11	.17	.13	.33
Total Instructional and Instructional Support (non-categorical)	.06	.08	.07	.13	.18	.30
	N=427	N=448	N=[illegible]	N=485	N=45	N=530
Percent of State Membership	86.6%	89.7%	91.7%	94.4%		

apparently consistent with expectations. The coefficients associated with the "in-formula" districts, while fairly low, are not suffiently close to zero to assure, by themselves, a wealth neutral distribution of revenues across the districts. However, the coefficients become more understandable when one realizes that they reflect not merely the "direct" relationship between SEV and school revenues but also that portion of the relationship which is attributable to a third, intervening variable: school district millage rates. The key question at this point is: How strong is the SEV/revenue relationship exclusive of millage rate?

Unfortunately, the multiplicative relationship between revenue and millage precludes the calculation of partial coefficients between SEV and revenue, where the influence of millage rates upon revenue would be removed. We have, however, calculated the correlation coefficients relating SEV to millage rates in order to estimate the impact of this relationship upon the SEV/revenue relationship, which is our primary interest. These coefficients are presented in the third row of Table IX.

Several observations may be made:

(1) The correlations are positive for the in-formula districts, but decline as the SEV "cutpoint" increases to $55,000. Thus, the higher SEV in-formula districts tend to levy somewhat higher millages than the less wealthy in-formula districts.

(2) The SEV/revenue and SEV/millage correlation coefficients are nearly equal for the districts below $45,000 SEV per pupil and are reasonably close for the districts below $50,000.

(2) A strong inverse relationship exists between SEV and millage rates for the out-of-formula districts (i.e., districts over $55,000 SEV per pupil). That is, the wealthier districts tend to have lower millage rates.

Regarding the issue of fiscal neutrality, the central question is whether the observed positive relationship between district SEV and district revenue is largely due to the observed positive relationship between SEV and millage rates. That is, are the higher-SEV districts generating more revenue than their lower-SEV counterparts because of their greater property wealth or because of their higher millages? If the former, then the distribution of revenue across the in-formula districts is not equitable/fiscally neutral; if the latter, the system is equitable since the lower-SEV could elect to increase their revenues to the level enjoyed by the wealthier districts by simply matching these districts' millage rates. Equal millages would ensure equal revenues.

This question can be rephrased as the following: To what extent do school revenues depend solely upon millage rates for the in-formula districts? The answer is provided in the following table:

TABLE X

CORRELATION COEFFICIENTS
BETWEEN SCHOOL DISTRICT REVENUES AND MILLAGE RATES

DISTRICTS WITH SEV PER PUPIL LESS THAN:					
40,000	45,000	50,000	55,000	SEV>55,000	State-wide
.99	.99	.99	.97	.41	.57

As the coefficients indicate, school district local and general membership revenue is almost perfectly correlated with millage rate for the districts below $50,000 SEV per pupil. Thus, the wealthier among this group of districts

receive more school revenue than the less wealthy not because of their relative wealth, but because of their greater tax effort. These districts have greater demand for education and therefore tax themselves at a higher rate to provide this level of education than do their less wealthy counterparts. The latter districts are free to do the same. They suffer no disadvantage in raising school revenue by virtue of their lower tax base. They simply choose a lower tax burden and revenue level. This exercise of local choice and the dependence of revenue upon millage rate, as opposed to tax base, is entirely consistent with our definition of equity or fiscal neutrality.

A wealth-neutral distribution of resources among the "in-formula" districts is also indicated by the low correlation coefficients relating district SEV to school expenditures. Interestingly, the coefficients for the districts over $55,000 SEV per pupil are also low, despite the fact that the distribution of general revenue across these districts is not neutral with respect to SEV (Table IX, page 21). The reason for this apparent inconsistency is the fact that unlike school revenues, expenditures are not a resource which is distributed across districts. Rather, the revenues are distributed and the expenditures are the product of both the revenue distribution and the budgetary choices of the local districts. Thus, while general (i.e., discretionary) revenues may show some correlation with SEV for a particular district group, expenditures may not since districts may differ in their budget decisions. (In addition, the first two expenditure categories -- "instructional expenditure" and "total expenditure" include some categorical revenue, thus exacerbating the lack of comparability with general revenues.)

Nevertheless, despite these technical qualifications, the data indicate that Michigan's general membership aid formula has achieved a largely

wealth-neutral distribution of general state and local revenue and of non-categorical instructional and instructional support expenditures for those K through 12 districts below $50,000 SEV per pupil. These districts are 469 in number and enrolled 1,855,195 pupils in school year 1977-78, or 91.7 percent of the total state membership.

The distribution of school district revenues and expenditures is clearly not neutral, however, for those districts above $55,000 SEV per pupil. The correlation coefficient of .42 relating SEV and equalized (i.e., state and local general) revenue indicates a fairly strong positive correlation between these variables for these wealthy districts. At the same time, the correlation coefficient of -.60 between SEV and millage assures us that the higher-SEV districts in this group generate relatively high revenue not because of higher tax effort, but <u>despite lower tax effort</u>. In other words, their higher revenue levels are attributable to their greater property wealth. Clearly, then, the distribution of revenue among the out-of-formula districts does not conform to the concept of equity, or fiscal neutrality.

While the districts over $55,000 SEV are only 45 in number and account for only 5.6 percent of total state membership, their effect upon the measure of wealth neutrality for the entire state is significant. With the inclusion of these districts in the analysis, the correlation coefficient relating equalized revenue to SEV increases to .50 and the coefficient relating wealth and noncategorical instructional and instructional support increases to .30. These state-wide correlations, however, should not obscure the central finding of this analysis: Michigan's general membership aid formula has succeeded in producing a fiscally neutral distribution of revenues and expenditures for nearly 92 percent of the pupils in the state.

At the same time, the finding of an absence of neutrality for the over-$55,000 SEV districts suggests two policy options which might achieve greater neutrality on a state-wide basis: (1) raising the guarantee level of the general aid formula; or (2) establishing a "recapture" mechanism for districts over $55,000 SEV per pupil (through, for example, restrictions on state categorical grants for these districts). These options may be advisable, that is, if state-wide equity--or fiscal neutrality--is the goal.

Our central finding of a wealth-neutral distribution of school district general revenue and noncategorical instructional and instructional support expenditures is not surprising in view of the analysis presented in Section III, above, where the "equalized" portion of school revenues was shown to have increased to nearly 94 percent by fiscal year 1977-78.

Our finding is also consistent with a similar analysis conducted by Robert Berne and Leanna Stiefel of New York University. Using time-series data regarding Michigan school districts' per pupil SEV and instructional expenditures, Berne and Stiefel computed correlation coefficients relating these variables for each year from fiscal year 1969-70 through 1976-77. The correlation was found to decline each year over this period, from .64 in 1969-70 to .30 in 1976-77. A number of alternative correlation measures were computed relating these variables and all were found to decline over this period.[4]

Their findings, however, are somewhat different from our own, since Berne and Stiefel computed correlation measures for the entire state while the analysis presented here focused on several increasingly expanded groups of districts defined in terms of property wealth. As noted above, examination of

---

[4]Robert Berne and Leanna Stiefel, Public Policy Research Institute, Graduate School of Public Administration, New York University. The findings referenced are, as yet, unpublished.

the distributional effects of the equal yield formula on the "in-formula" districts only indicates far greater wealth neutrality than does examination of the state as a whole. To illustrate, our analysis revealed a very high correlation between district SEV per pupil and school revenue (.81) for all K through 12 districts for 1977-78. However, the correlation drops dramatically (to a mere .05) once the 61 districts over $50,000 SEV (accounting for only 8.2 percent of total state membership) are removed from the sample.

This same cautionary comment may be made of an analysis of school finance in Michigan completed by Stephen J. Carroll of the Rand Corporation. This study, based upon data spanning the five-year period from 1971-72 through 1975-76, concluded that the distribution of school district revenues was <u>not</u> rendered more wealth neutral by the equal yield formula.[5] There are two probable reasons for this finding:

(1) The study did not address the distribution of educational resources among the in-formula districts as a separate group;

(2) During the time period covered by the analysis, the state aid guarantee extended only to the first 22 mills (1973-74) or 25 mills (1974-75) or 27 mills (1975-76). As the Rand Study notes, the effect of out-of-formula districts upon the overall measure of wealth neutrality would be significant.

The Rand study did find, however, a substantially reduced relationship between school district revenues and district household incomes as well as substantial increases in the degree to which school revenues depended upon millage rates. Both findings are consistent with the concept of equity or fiscal neutrality.

---

[5]Stephen J. Carroll, The Search for Equity in School Finance: Results from Five States, (Santa Monica, California: The Rand Corporation, 1979, pp. 137-138).

2. Equality -- The concept of equality simply requires that educational resources (e.g., expenditures, staffing levels, or school programs) be distributed in equal amounts across local school districts. This concept is based upon a "leveling", or "leveling up" philosophy which holds that education is so valuable a commodity that all local school districts should consume it in equal amounts. As such, this concept runs counter to the notion of subsidiarity, or local control, a notion that is central to the concept of equity. While equity implies equal opportunity of local school districts to decide upon and deliver the level of educational services they desire, it does not imply equal program across districts. Equity ensures local choice, including the choice of differing from other districts. Equality would restrict this choice.

The degree of equality in the distribution of resources across local districts is indicated by the variance of that distribution. That is, the existence of any variance in the distribution would indicate inequality. The degree of inequality in the distribution of non-categorical instructional and instructional support expenditures across local school districts in Michigan, may be seen from the following frequency table and histogram:

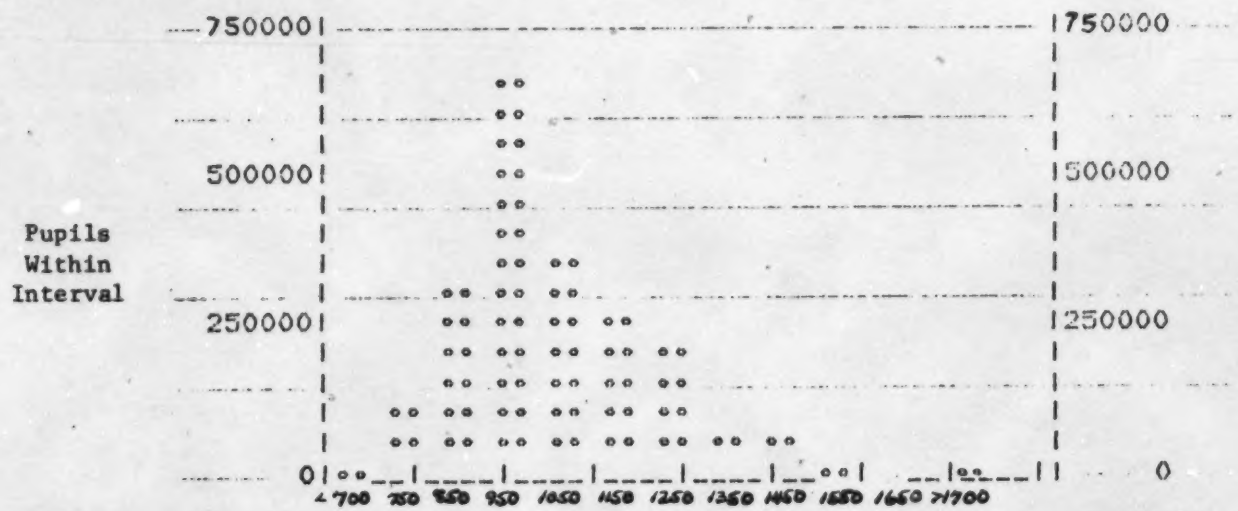
TABLE X

Frequency Table: Pupils by Level of Instructional Expenditure

FY 1977-78

Interval	Non-categorical Instructional Expenditures per Pupil	Pupils Within Interval
1	less than $700	19,432
2	$700 - $799	104,988
3	$800 - $899	322,141
4	$900 - $999	635,597
5	$1,000 - $1,099	372,211
6	$1,100 - $1,199	262,500
7	$1,200 - $1,299	184,997
8	$1,300 - $1,399	27,889
9	$1,400 - $1,499	61,399
10	$1,500 - $1,599	16,367
11	$1,600 - $1,699	0
12	$1,700 and over	16,340

Figure 1: Frequency Histogram --
Pupils by District Expenditures FY 1977-78



Noncategorical Instructional and
Instructional Support Expenditures per Pupil

(Interval mid-points indicated)

While the histogram indicates a large number of pupils in districts spending between $900 and $1,000 per pupil for instruction and instructional support, the data clearly reflect an absence of equality in the distribution of noncategorical instructional and instructional support expenditures across school districts in Michigan.

In view of the low correlation coefficient observed between this measure of school district expenditures and district SEV for the 469 K through 12 districts below $50,000 SEV per pupil (.07), the variation in expenditures cannot be attributed to disparities in school district property wealth. Rather, the variance in expenditures stems from variance in district millage rates which reflect, in turn, variation in the supply of and demand for education across the districts. (The identification of the causal factors behind these supply and demand conditions is a complex matter and will be taken up in a subsequent working paper.)

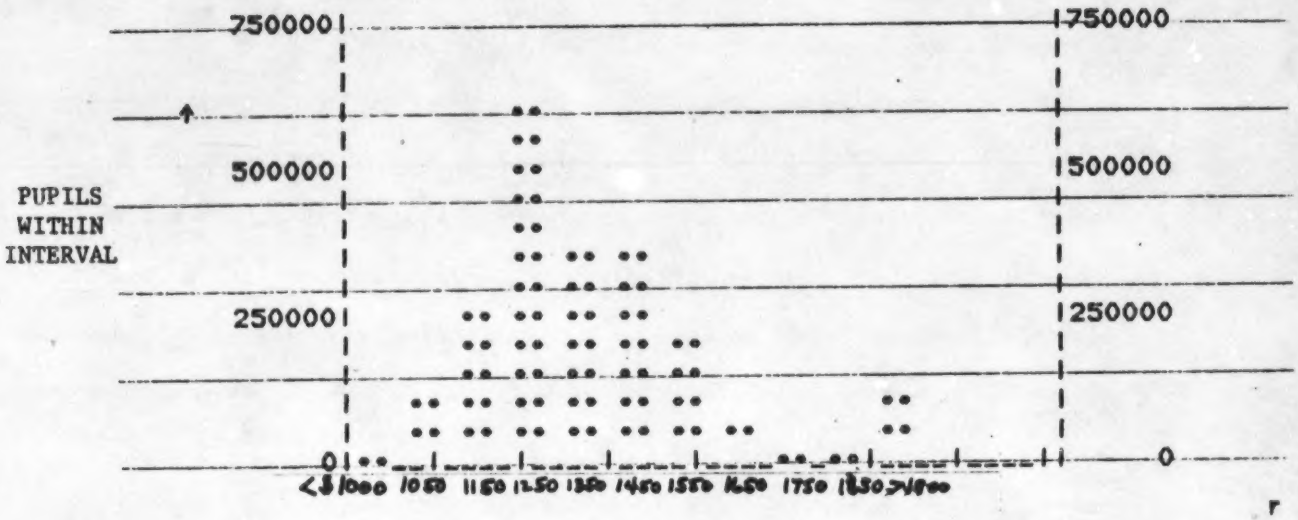
A corresponding lack of equality is evident with regard to the distribution of general state and local revenue across school districts in Michigan:

TABLE XI

Frequency Table: Pupils by Level of State and Local General Revenue, FY 77-78

Interval	State and Local General Revenue per Pupil	Pupils Within Interval
1	less than $1,000	17,757
2	$1,000 - $1,099	95,812
3	$1,100 - $1,199	271,644
4	$1,200 - $1,299	610,352
5	$1,300 - $1,399	361,825
6	$1,400 - $1,499	339,317
7	$1,500 - $1,599	176,212
8	$1,600 - $1,699	38,396
9	$1,700 - $1,799	17,582
10	$1,800 - $1,899	10,825
11	$1,900 and over	84,139

Figure 2: Frequency Histogram--Pupils by District Revenue, FY 77-78



State and Local General Rev. PP
(Interval mid-points indicated)

As the frequency table and histogram indicate, the distribution of state and local general revenue is quite unequal across the districts. As noted above, variation in the amount of such revenue among districts below $50,000 SEV is solely due to variation in millage rates, while variation in revenue for districts over $50,000 is due to variation in both millage and SEV.*

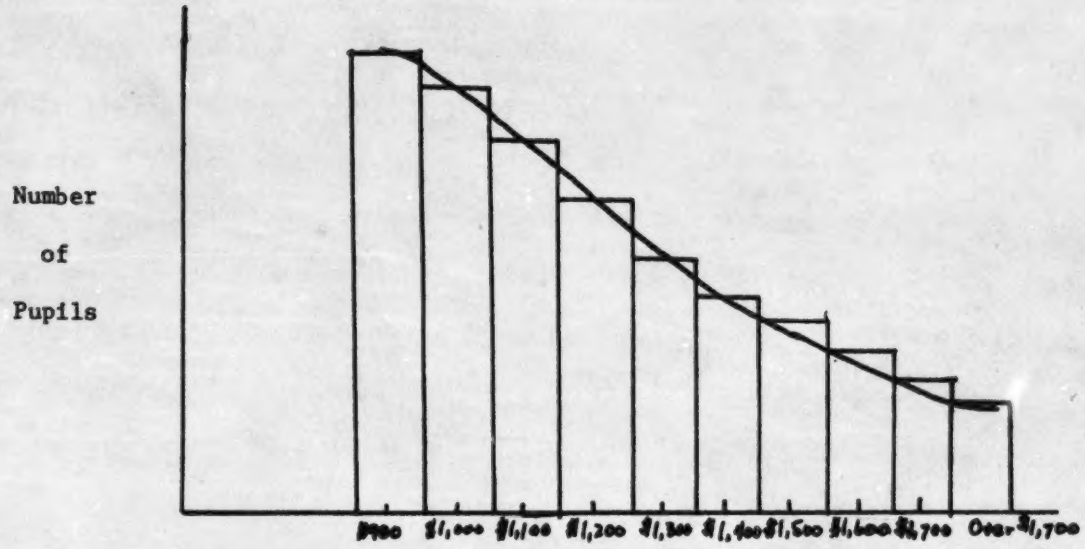
In sum, the data clearly indicate a lack of equality in distribution of general revenue and instructional expenditures across school districts in Michigan. Moreover, any significant reduction of this inequality would appear to require increased state control regarding the support of public education.

---

*The frequency tables and histograms are based upon data for all 577 school districts in Michigan.

3. Excellence -- The concept of excellence would apply to an educational system in which each local unit is endowed with at least a prescribed level of resources constituting an educational program of recognized quality. In addition, each school district would have the opportunity to go beyond this prescribed level. Thus, a floor would be imposed below some measure(s) of program quality but no ceiling would be placed above.

This concept, therefore, is clearly distinguishable from both equity and equality. In the first place, excellence does not necessarily imply that a local school district's level of resources is independent of its wealth nor does it imply euqal revenue levels across districts. Some idea of a resource distribution which would satisfy this criterion can be gained from inspection of the histogram of school district expenditures presented above (Figure 1, page 29). As the histogram shows, a large number of pupils fall within interval four, which corresponds to a per pupil expenditure level of between $900 and $1,000. If this expenditure level were adopted as a base level of resource adequacy and all districts required (by means of a constitutional amendment) to spend at least $900 per pupil for noncategorical instructional and instructional support services with no maximum expenditure level specified, the distribution of such expenditures could approximate the following:



Since all school districts would be at or above the prescribed $900 per pupil expenditure, the system would conform to the model of excellence, at least according to this single indicator. However, the system would not necessarily conform to the concept of equity and would clearly not conform to the concept of equality.

V. Summary and Conclusions

This paper has examined the distributions of general (i.e., noncategorical) revenues and instructional expenditures across school districts in Michigan and has evaluated these distributions in terms of three norms: equity, equality and excellence. An earlier paper (Working Paper #1) provided a similar analysis of the distribution of instructional staff across districts. Since both papers are parts of a single analysis of Michigan school finance, this section will address the findings of both.

A. Equity (Fiscal Neutrality) -- A system of school finance conforms to the concept of equity if the system effects a distribution of educational resources (e.g., staff or revenue) which depends solely upon local district tax effort and not upon local district wealth. Equal district tax effort generates equal educational resources. Our analysis of this issue and review of related studies has revealed the following:

(1) Michigan has achieved virtually complete equity in the distribution of general revenues and expenditures across school districts below $50,000 SEV per pupil. (These are districts having property tax bases which are sufficiently low for them to receive general membership aid.) These districts account for nearly 92 percent of the pupils in Michigan public schools.

(2) The distribution of noncategorically-funded instructional staff is similarly equitable across this same group of school districts.

(3) If the inequity associated with out-of-formula districts is thought to be a problem, then consideration should be given either to substantially raising the guarantee level or to a mechanism, commonly known as recapture, which would reduce the amount of categorical funds going to the out-of-formula districts.

B. Equality -- A system of school finance would conform to the concept of equality if the system effects an equal or nearly equal distribution of resources across school districts. Our analysis and review of related studies has revealed the following:

(1) Equality has not been achieved in Michigan -- a substantial variation exists across school districts with regard to the distribution of general revenue, general instructional expenditures and noncategorically-funded instructional staff.

(2) It is doubtful whether the present system will narrow the distribution of either dollar resources or staff. Indeed, the present system may not have been designed to accomplish that end. If it is thought to be desirable to have close to equal expenditures per pupil or close to equal staff ratios among school districts in the state, then there must be a major change in the system of funding. This would probably require a constitutional amendment establishing minimum and maximum millage rates for local districts. In addition, statutory restrictions would probably have to be placed on the use of funds.

C. Excellence -- A school finance system would achieve excellence if each school district is provided with at least a prescribed level of resources constituting an educational program of recognized quality. In addition, districts would have the opportunity to go beyond this prescribed level.

Although our analysis has not attempted to specify such a prescribed level of educational program quality, we have addressed the educational resources of the state as a whole. We have found;

(1) Expenditure levels have been increasing, and increasing faster than inflation.

(2) Staffing ratios have been increasing, both because there has been an increase in total staff and because of declining enrollments.

(3) Even though no minimum level has been established for either expenditures or staff adequacy ratios, achievement of such a goal would require a major reform, probably necessitating constituitonal amendment.

D. Other Findings

Preliminary analysis indicates the absence of a relationship between school district expenditures and school district staffing levels. This is due primarily to cost differentials, particularly staff salaries. In other words, the school districts with relatively high expenditures may not enjoy superior staffing levels because their staff salaries and other costs (e.g., benefit costs) are also relatively high. On the other hand, a low expenditure district may have favorable staffing levels because salaries and other staffing costs are also low.

This issue of educational resource cost differentials will be a major focus of Working Paper #3.

APPENDIX

THE MEMBERSHIP AID FORMULA: PER-PUPIL COMPUTATIONS

1967-68	($12,727 SEVpp or more)	$294.52, minus (SEVpp x 5.28 mills)
	(less than $12,727 SEVpp)	$427.87, minus (SEVpp x 15.75 mills)
1968-69	($21,000 SEVpp or more)	$348.00 minus (SEVpp x 7 mills)
	(12,737 to $20,000.00 SEVpp)	$326.75, minum (SEVpp x 5.86 mills)
	($9,920 to $12,736.99 SEVpp)	$474.75, minus (SEVpp x 17.48 mills)
	(less than $9,920 SEVpp)	$499.75, minus (SEVpp x 20 mills)
1969-70	($12,864 SEVpp or more)	$408.00 minus (SEVpp x 9 mills)
	(less than $12,864 SEVpp)	$549.50, minus (SEVpp x 20 mills)
1970-71	($15,500 SEVpp or more)	$530.50, minus (SEVpp x 14 mills)
	(less than $15,500 SEVpp)	$623.50, minus (SEVpp x 20 mills)
1971-72	($17,000 SEVpp or more)	$559.50, minus (SEVpp x 14 mills)
	(less than $17,000 SEVpp)	$661.50, minus (SEVpp x 20 mills)
1972-73	($17,750 SEVpp or more)	$644.00 minus (SEVpp x 16 mills)
	(less than $17,750 SEVpp)	$715.00 minus (SEVpp x 20 mills)
1973-74	($38,000 minus SEVpp) x (mills levied up to 22)	
1974-75	($39,000 minus SEVpp) x (mills levied up to 25)	
1975-76	($42,400 minus SEVpp) x (mills levied up to 20), plus ($38,250 minus SEVpp) x (mills levied from 20 to 27)	
1976-77	($43,900 minus SEVpp) x (mills levied up to 20), plus ($39,600 minus SEVpp) x (mills levied from 20 to 28)	
1977-78	($40,000 minus SEVpp) x (mills levied up to 30), plus $164	
1978-79	($40,000 minus SEVpp) x (mills levied up to 30), plus $274, plus for under $40,000 SEVpp districts only, ($40,000 minus SEVpp) x (permissible millage over 30) Permissible millage over 30 = $\frac{\text{(mills authorized over 30) x (SEVpp)}}{\$40{,}000}$	
1979-80	($43,000 minus SEVpp) x (mills levied up to 30 and one-half the mills over 30), plus $325	

(Source: Education Section, Office of the Speaker, Michigan House of Representatives)

As indicated above, the "Equal yield" formula was instituted in 1973-74, replacing the Strayer-Haig or "deductible-millage" formula of previous years. Since that time, two principal modifications have been made to the proposal. First, the uniform guarantee level was replaced in 1975-76 by a two-tiered formula which provided for a lower guarantee level for each mill over 20 mills. The change was intended to provide a disincentive for school districts to levy high millages and thereby reduce the "millage gap" in Michigan -- that is, the disparity in millage rates between high- and low-millage districts. As indicated in Table VI, above, however, this modification failed to reduce the gap. In fact, the gap increased in 1976-77.

The general membership formula was modified somewhat for the 1977-78 fiscal year through the introduction of a base amount in the state guarantee. This base per pupil payment had the effect of making each additional mill of operating tax levied by a district worth progressively less in state membership aid. This feature was retained in the formula in subsequent years and its effect upon school aid guarantee levels in FY 79-80 is discussed at length in Section I, above.

In 1978-79, the membership formula was modified through the introduction of a "rollback" feature, whereby districts levying more than 30 mills for school operations would receive formula reimbursement for over-30 millage only if they translated the additional aid into property tax relief. This feature was dropped from the general membership formula in 1979-80.

REFERENCES

[1]Robert Berne and Leanna Stiefel, State School Finance Reform: Some Optimistic Findings, Working Paper #16, Public Policy Research Institute, Graduate School of Public Administration, (New York University, June, 1979)

[2]Gene Caesar, Zylphia Orr, and Tom Wagamon, General Statistics for the Public Schools of Michigan (Michigan House of Representatives, Lansing, MI July 1, 1979)

[3]Stephen J. Carroll, The Search for Equity in School Finance: Results from Five States (Santa Monica, CA: The Rand Corporation, 1979)

[4]John E. Coons, William H. Clune III and Stephen D. Sugarman, Private Wealth and Public Education. Cambridge, MA: Harvard University Press, 1970

[5]James L. Phelps, "The Equal-Yield Concept in Michigan--Third Year Results" Michigan School Board Journal, Vol XXIII, No. 9, (November, 1976) 12-13 and 17.